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File - Test Section, Infantry Board

REPORT

of

The Infantry Board

No. 1607

M9A1 GRENADE BODY WITH T-9 FUZE

FORT BENNING, GEORGIA

9 May 1944

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IB-471.6

9 May 1944.

Subject: Report of Test of M9A1 Grenade body with T-9 Fuze.

To: The Chief, Ground Requirements Section, Army Ground Forces, Army War College, Washington, D. C.

1. Authority and Purpose:

a. Test of the above material was directed by 2nd Indorsement, Ground Requirements Section, Headquarters, Army Ground Forces, dated 19 March 1944, 471.6 (C) (1 Mar 44) GNRQT-11/75456, on letter, Office of the Chief of Ordnance dated 1 March 1944, OO 471.82/2426 (C), SPOTM, Art. Amm. Sec., (Appendix B).

b. The general purposes of the test were to determine:

(1) Whether the body of the Grenade, Rifle, AT, M9A1, fitted with a time-fuze assembly similar to that on the standard hand grenades is suitable and desirable, as a replacement for present standard hand grenades, for Infantry use, and

(2) To determine whether the Hand Grenade Fuze T9 is suitable and satisfactory as to reliability, freedom from noise, freedom from sparking prior to detonation, and freedom from smoke.

2. Description of Material:

a. The subject grenade is the body of the Anti-tank Rifle Grenade M9A1 with the fuze and tail removed and replaced by the Hand Grenade Fuze T9, so as to convert it into a time-fused hand grenade.

b. The subject Hand Grenade Fuze, T9 is similar to the regular hand grenade fuze, used on the fragmentation Hand Grenade Mark II, but modified in shape and dimensions to fit the contours of the M9A1 Rifle Grenade body. It incorporates a sparkless, noiseless and smokeless primer and 4-second time train combined with the same detonator and booster elements as the M9A1 Rifle Grenade. The grenade, complete, is larger and narrower than the Mark II Fragmentation Grenade, and weighs approximately twenty per cent less (Figures 1 and 2, Test No. 1).

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3. Factual Background: Incidental to tests of the M9A1 Anti-tank Rifle Grenade, The Infantry Board found and reported that, in addition to its armor-piercing effect, that grenade had a violent and dense lateral fragmentation effect rendering it an effective anti-personnel item. It was also found and reported that the then standard Fragmentation Hand Grenade, Mark II, which was loaded with E.C. blank powder as a bursting charge, was relatively ineffective. The suggestion was therefore submitted by The Infantry Board that it would be desirable to attempt to develop an all-purpose grenade body which, when filled with a shaped high explosive charge for use against armor, would also be effective against personnel in the open through fragmentation.

Reports from the Southwest Pacific combat area after fighting got under way in the present emergency, indicated further defect in the fragmentation hand grenade, in that noise, sparks and smoke emitted by the fuze after activation tended to disclose the thrower's position and warn the enemy.

To remedy both of the above deficiencies, the body of the Mark II Fragmentation Hand Grenade has recently been loaded with a bursting charge of 2 ounces of flake TNT, and fitted with a sparkless, noiseless and smokeless fuze, T2. This combination was tested by The Infantry Board, found highly satisfactory and recommended for adoption.

The subject Grenade appears to be the result of one of the methods sought to improve the hand grenade and to standardize on one all-purpose grenade body.

4. Facts Disclosed by Tests. The tests on the subject material are described in detail in the appended Report of Test. The results are summarized as follows:

a. The subject T-9 Fuze is reliable in functioning, and is free from objectionable noise, sparking and smoke during operation. (Test No. 2.)

b. The delay-time of the subject T-9 Fuze is approximately 4.3 seconds, and substantially equal to that of the present standard fuze in the standard Hand Grenade Mark II. (Test No. 2.)

c. The subject Grenade M9A1 with the T-9 Fuze cannot be used with Grenade Projection Adapter M1 without modifications and additions of the latter.

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d. When the Projection Adapter M1 is suitably modified, and when provided with an improvised means of releasing the safety lever, the subject grenade and fuze can be projected, as a rifle grenade, from the Carbine and Rifle to maximum ranges of 159 yards and 182 yards, respectively. (Test No. 3.)

e. The subject Grenade M9A1 with T-9 Fuze cannot be successfully launched as a rifle grenade with a modified Grenade Projection Adapter M1 using the auxiliary propelling charge, Cartridge M7. (Test No. 3.)

f. The fragmentation effect of the subject Grenade M9A1 and T-9 Fuze is highly directional. (Test No. 4.)

g. The average, overall fragmentation effect of a number of the subject grenades compares favorably with that of a similar number of Fragmentation Hand Grenades Mark II loaded with 2 ounces of flake TNT and is greatly superior to that of the Mark II Grenade loaded with N.C. Powder. (Test No. 4.)

h. The probable casualty producing effect of the subject grenade when projected with a suitable grenade projection adapter from a rifle or carbine against personnel in the open and in open foxholes, is less than that of the TNT-loaded Mark II Grenade, and greater than that of the NC-powder loaded Mark II Grenade similarly launched. (Test No. 5.)

i. The subject Grenade M9A1 with Fuze T-9 can be thrown by hand to approximately the same effective distance and with approximately the same accuracy as the standard Hand Fragmentation Grenade Mark II. (Test No. 6.)

j. That the subject M9A1 Grenade with T-9 Fuze is effective, when used singly, for armor-piercing and very small demolition tasks, but when used in groups the advantage of the shaped charge is retained only in the individual grenade used to initiate the detonation. (Test No. 7.)

5. Discussion: The above facts show that the subject combination of the body of the M9A1 Anti-tank Grenade with the T-9 time fuze constitutes an effective hand grenade. Grenade for grenade, however, its highly directional fragmentation undoubtedly renders it less certain of producing

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casualties than the present standard Fragmentation Grenade Mark II loaded with two ounces of flake TNT. This, in itself, would tend to offset any advantage that might accrue from the adoption of one, all-purpose grenade body. It must also be remembered that the successful development of the grenade projection adapter by which the standard hand grenade can be projected accurately to ranges four or five times that attainable by hand-throwing, has greatly increased the ability of our troops to hurt the enemy without being, themselves, hurt. The hand-thrown aspect is therefore not dominant. In this respect the subject grenade falls far short of the present standard hand grenade, due to its unsymmetrical shape and the preponderance of weight and bulk in the bouchon and safety lever.

In view of the above, in spite of its good points, it is difficult to see how adoption of this grenade, to replace in whole or in part the present standard TNT loaded Mark II Grenade with T2 Fuze, could be justified.

6. Conclusions. The Infantry Board concludes:

a. That the subject Grenade M9A1 with T-9 Fuze is inferior in all-around effectiveness to the present standard Grenade, Fragmentation, Hand, Mark II, with TNT filling and T2 Fuze, and is not suitable for Infantry use.

b. That there is no requirement in the Infantry for the subject Fuze, Grenade, Hand, T-9.

7. Recommendations. The Infantry Board recommends:

That the subject Grenade, Hand, M9A1, with Fuze T-9, be given no further consideration as an item of Infantry equipment.

For the President:

INGOMAR M. OSETH,
Colonel, Infantry,
Director.

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TEST SECTION
THE INFANTRY BOARD
FORT BENNING, GEORGIA

24 APRIL 1944

SUBJECT: REPORT OF TEST OF M9A1 GRENADE WITH T-9 FUZE

TO: THE PRESIDENT, THE INFANTRY BOARD, FORT BENNING, GEORGIA

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1. Authority and References.

a. Authority:

(1) Memorandum, The Infantry Board (IB-471.6) 31 March 1944 (Appendix "A").

(2) Letter, Office of The Chief of Ordnance (OO 471.82/2426(c)) 1 March 1944 with two Indorsements. (Appendix "B")

b. References:

Reports of The Infantry Board Nos. 1547 and 1584.

2. Introductory Information.

a. The T-9 Fuze was developed in accordance with the recommendations of O.C.M. Item 21552, approved by the Ordnance Committee on 16 September 1943, that a time fuze be developed for conversion of the M9A1 AT Grenade into an anti-personnel hand grenade. It was felt that a hand grenade made up of the M9A1 grenade head and a T9 type fuze might be more effective against personnel than the MK II hand grenade loaded with two (2) ounces of flake TNT.

(1) The subject grenade is made up of the head of the standard M9A1 AT grenade and the T9 fuze.

(2) The T9 fuze is similar to the T2 hand grenade fuze in that it is flashless, smokeless and functions with little noise. It is a four to five second delay, detonating type fuze made up of a modified T2 fuze combined with the M18 detonator assembly and the tetryl booster used in the M9A1 AT grenade. The subject fuze screws into the M9A1 grenade head in place of the usual rifle grenade fuze and stabilizer assembly, thereby making a complete hand grenade. (See Figures 1 and 2)

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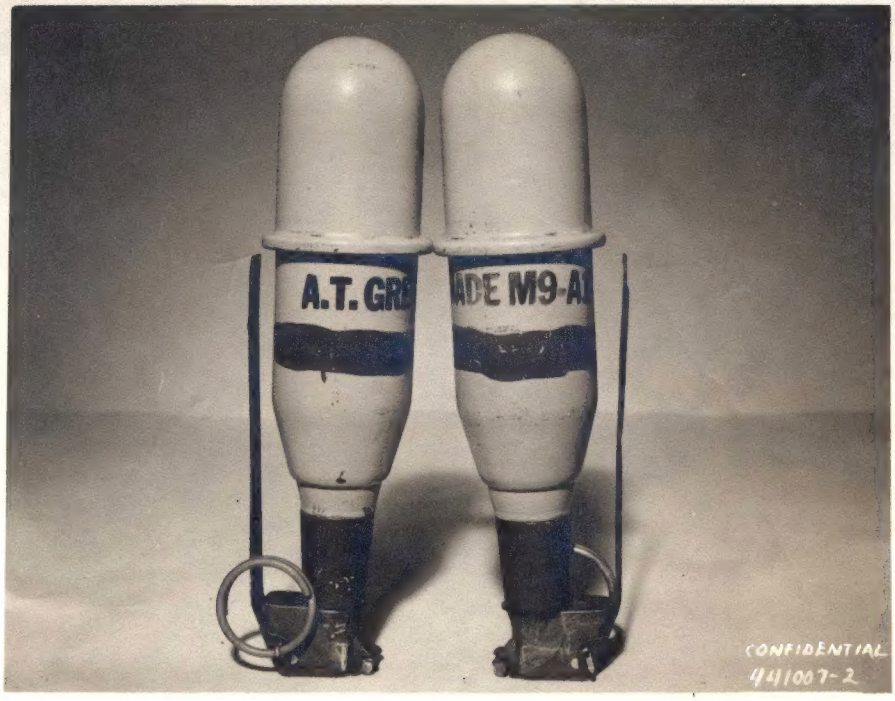

M9A1 Grenade with T9 Fuze

Figure 1

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M9A1 Grenade with T9 Fuze (Disassembled)

a. M9A1 Grenade Body
b. Tetryl Cup and Pellet
c. Aluminum Disc
d. M18 Detonator Assembly
e. Fuze B ody
f. Modified T2 Fuze

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Figure 2

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3. Purpose of Test.

a. To compare the subject grenade with the MK II hand grenade loaded with .75 ounces EC and with two (2) ounces of flake TNT as follows:

(1) Time and reliability of fuse.

(2) Noise, smoke and sparks caused by activation of fuse primer and burning of fuse.

(3) Fragmentation in panel area.

(4) Means of projecting subject grenade from rifle and carbine using M1 projection adapter.

(a) Accuracy, dependability and maximum range within burning time of fuse that grenade can be projected.

(5) Effect of air bursts on personnel in foxholes and above ground.

(6) Method of throwing subject grenade and results as to accuracy and range.

(7) Effort required to teach men to throw subject grenade and results obtained.

(8) Other pertinent data.

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4. Details of Tests and Results are as follows:

Test No. 1.

a. Purpose:

(1) To compare the physical characteristics of the T9 fuze with those of the fuzes T2 and M10A3.

(2) To compare the physical characteristics of the grenade equipped with the T9, T2 and M10A3 fuze.

b. Method: By inspection and weighing.

c. Results:

(1) Physical characteristics of the T9, T2 and M10A3 fuze.

Fuze Type	T9 Detonating	T2 Detonating	M10A3 Igniting
Booster Compound	Tetryl	PETN	Black Powder
Markings	Black letters and black tip on safety lever	Black letters and black tip on safety lever	Black letters and black tip on safety lever

(2) Comparative physical characteristics of the subject grenade and MK II grenades with T2 and M10A3 fuzes.

Grenade	M9A1 (HE)	MK II (HE)	MK II (HE)
Fuze	T9	T2	M10A3
Filler	Pentolite	TNT	EC
Weight of Filler	4 oz.	2 oz.	3/4 oz.
Weight of Grenade	1.0#	1.31#	1.26#
Color	Yellow with black letters	Olive drab with 2 yellow bands	Olive Drab

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Test No. 2.

a. Purpose: To compare the T9, T2 and M10A3 fuzes in regard to the following characteristics:

(1) Functioning
(2) Sound when striker is actuated
(3) Burning time of fuze
(4) Sparks and smoke produced by fuze.

b. Method:

(1) By study of the T9, T2 and M10A3 fuzes while in operation and recording observations.

(2) Observations of the fuzes were made both during daylight and darkness under the following conditions:

(a) When thrown by hand
(b) When projected from a rifle
(c) When allowed to arm itself in the thrower's hand and burn for 1 second before throwing.

c. Results:

(1) Functioning: Observations of functioning of fuzes T9, T2 and M10A3 during all tests are tabulated below:

Type of Fuze	T9	T2	M10A3
No. of Grenades Fired	52	25	25
No. of Grenades Functioning	48	25	25

Note: One of the T9 fuzes failed to function when thrown by hand. Two T9 fuzes failed to function when projected from a rifle. All three fuzes functioned when the striker was retracted and allowed to fall the second time.

(2) Sound when striker actuated.

(a) The T9 fuze incorporates the firing mechanism of the T2 fuze. Careful observation of the functioning of the T9 and T2 fuzes failed to disclose any trace of noise when the striker was actuated.

(b) In some instances, a soft metallic sound was caused by the safety lever leaving the grenade.

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(c) The M10A3 fuze makes a distinct explosive report when the striker actuates the primer of the fuze.

(3) Burning time of fuzes.

(a) Careful timing of the fuzes when thrown gave the following tabulated results.

Type of Fuze	T9	T2	M10A3
No. of Fuzes Tested	15	15	15
Average burning time	4.3 sec.	4.4 sec.	4.4 sec.
Variation of time of Burning ± - Average	.3 sec.	.3 sec.	.2 sec.

(b) The times of the T9 fuzes did not go below 4.0 seconds nor did they go above 5.0 seconds.

(4) Smoke produced by burning fuze.

(a) Careful observation of the actuation and burning of the T9 and T2 fuze failed to reveal any trace of smoke due to the burning of the fuze primer or the fuze.

(b) The fuze M10A3 emits a puff of smoke when the fuze is actuated. A revealing cloud of smoke is generated by the actuated grenade fuze that can be seen for several hundred yards.

(5) Sparking produced by burning fuzes.

(a) Careful observation of the actuation and burning of the T9 and T2 fuzes at night failed to reveal any trace of flash from the primer or sparks from the fuze, while the grenade is moving through the air.

(b) The M10A3 fuze makes a clearly visible flash at night when the striker actuates the fuze primer, however, it does not sparkle or leave a trail of light when projected or thrown.

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Test No. 3.

Weapon: M1 Rifle w/M7 Launcher
M1 Carbine w/M8 Launcher
M1 Projection Adapter
Ammunition: M3 Cartridge, M6 Cartridge, Auxiliary Cartridge M7.

a. Purpose: To compare the maximum range, within burning time of the fuze, that the grenades with the T9, T2 and M10A3 fuzes can be projected from the rifle and carbine and produce effective bursts.

b. Method:

(1) MK II and subject M9A1 grenades were launched from an M1 Rifle and Carbine placed in a rifle rest. The angle of elevation was varied until approximately 50% of the grenades were bursting in the air and the other 50% on the ground.

(2) 10 grenades were fired at this elevation and the average range calculated from the ranges of the ground bursts.

(3) The same procedure was followed using the M7 Auxiliary Cartridge as an additional propellant.

(4) Due to the shape of the subject M9A1 grenade body, it was necessary to distort the M1 projection adapter and use an expedient for tripping the grenades safety lever on firing. (See Figure 3).

c. Results:

(1) Tabulated below are the results of the range firing of the grenades.

Weapon	Grenade	Propellant	Angle of Elevation	Maximum Range Obtained
M1 Rifle	M9A1 w/T9 fuze	M3 Cartridge	30°	179 yards
"	MK II w/T2 fuze	M3 Cartridge	27°	153 yards
"	MK II w/M10A3 fuze	M3 Cartridge	27°	153 yards
"	M9A1 w/T9 fuze	M3 and M7 Cartridge	28°	182 yards
"	MK II w/T2 fuze	M3 and M7 Cartridge	18°	214 yards
"	MK II w/M10A3 fuze	M3 and M7 Cartridge	18°	214 yards

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Weapon	Grenade	Propellant	Angle of Elevation	Maximum Range Obtained
Carbine	M9A1 w/T9 fuze	M6 Cartridge	50°	91 yards
"	MK II w/T2 fuze	M6 Cartridge	53°	95 yards
"	MK II w/M10A3 fuze	M6 Cartridge	53°	96 yards
"	M9A1 w/T9 fuze	M6 and M7 Cartridge	29°	153 yards
"	MK II w/T2 fuze	M6 and M7 Cartridge	27°	206 yards
"	MK II w/M10A3 fuze	M6 and M7 Cartridge	27°	198 yards

(2) The M9A1 grenade with T9 fuze when projected with the M3 cartridge was found to be stable in flight approximately 75% of the time. All M9A1 grenades with T9 fuze projected with the M7 and M3 cartridges were unstable and inaccurate.

(3) All M9A1 grenades with T9 fuzes projected from the carbine were stable in flight.

(4) The unstable flight of the M9A1 grenade with T9 fuze in the Projection adapter M1 was apparently due to the lack of support of the grenade in the projection adapter as well as the tendency of the safety lever to remain in the grenade and cause a deflection.

(5) Inaccuracies in range due to the unstable flight were excessive. Grenades having unstable flight were projected approximately 65% of the average range of grenades with stable flight. Lateral deflection was magnified by the unstable flight.

(6) The present projection adapter M1 does not appear to be a satisfactory method of projecting the grenade M9A1 with the T9 fuze.

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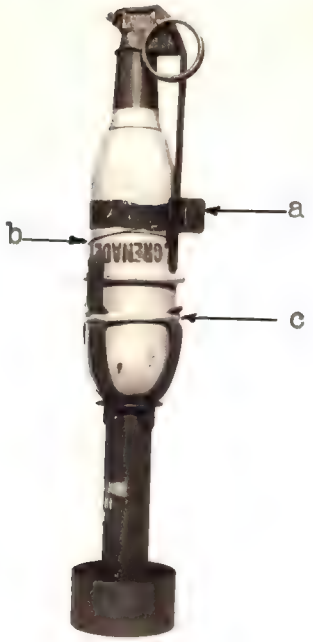

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Method of projecting the M9A1 Grenade with T9 Fuze from the rifle using the M1 projection adapter.

a. Inertia weight
b. Soft steel trip wire
c. Rubber band

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Figure 3

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Test No. 4

a. Purpose: To compare the relative fragmentation of the subject grenade with the MK II grenade w/T2 fuse and with the MK II grenade w/M10A3 fuze in a panel area.

b. Method:

(1) An inclosure of kneeling silhouettes was constructed in three sections. Each section was erected in a 120° arc at ranges of 2-1/2, 5 and 10 yards from a central point.

(2) Twenty grenades of each type (M9A1 w/T9 fuse, MK II w/T2 fuse and MK II w/M10A3 fuse) were fired in the enclosure. Five grenades were fired vertically and five were fired with the fuse pointing at each panel so as to give overall distribution of fragments.

(3) Scoring was accomplished by counting the total number of hits on each section of silhouettes.

c. Results:

Grenade Filler	M9A1 4 oz. Pentolite	MK II 2 oz. Flake TNT	MK II .74 oz. RE
Fuse	T9	T2	M10A3
Grenades Fired	20	20	20
2-1/2 yard circle (30 Silhouettes)			
Average number of hits	971	753	22
Average number of Silhouettes hit	30	30	8
5 yard circle (51 Silhouettes)			
Average number of hits	337	432	10
Average number of Silhouettes hit	49	51	6
10 yard circle (125 Silhouettes)			
Average number of hits	168	84	4
Average number of Silhouettes hit	71	62	4

Observation of the fragmentation of individual grenades when thrown and laying on their sides disclosed that fragmentation is dense in the 180° arc toward the fuse of the subject grenade. The 180° arc toward the ogive has very few fragments other than the cone of fire of the shaped charge. The fragments from the ogive are large and scattered. The shaped charge fragmentation is similar to the pattern of a full choke small gauge shotgun. This shot group effect of the shaped charge was very accurate at 15 yards.

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Test No. 5.

a. Purpose: To determine the casualty effect of the M9A1 grenade with T9 fuze as compared to the MK II grenade when projected for air burst over troops in the open and in foxholes.

b. Method:

(1) A level area 25 yards square was measured off and 25 three dimensional kneeling silhouettes erected on 5 yard centers. 25 kneeling silhouettes were placed on the ground to represent prone riflemen. 25 standard foxholes 20" deep were prepared and cardboard placed in the bottom to record hits.

(2) Five grenades each of M9A1, with T9 fuze, MK II with T2 fuze and MK II with M10A3 fuze were fired so as to burst in the air over the target area.

(3) Hits for each grenade were counted on each type of target in the area and results recorded.

c. Results:

	Average Number of Targets Hit per Grenade		
Grenade	Kneeling	Prone	Foxhole
M9A1 w/T9 fuze	3.1	2.6	2.
MK II w/T2 fuze	9.1	7.2	2.6
MK II w/M10A3 fuze	1.7	1.4	1.

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Test No. 6.

a. Purpose:

(1) To determine best method of throwing subject grenade.

(2) Effort necessary to teach men to throw subject grenade.

(3) Results of instruction in throwing subject grenade for accuracy as compared to MK II grenade.

b. Method:

(1) An instructor from the grenade committee of The Infantry School and five enlisted men trained in grenade throwing were secured to determine the best means of throwing the subject grenade.

(2) Five men were given 4 hours instruction on the grenade court with primary emphasis on throwing at the main and crater courts.

(3) Five men were given practice with MK II grenades in a corresponding time to that with the M9A1 grenade.

(4) The two teams were tested on the main and crater courts and scored on the number of hits made out of 10 throws at each target.

c. Results:

(1) No means of throwing the subject grenade overhand could be devised that would give the grenade a spiral. The subject grenade is easily spiraled when thrown underhand in a manner similar to the pitching of a soft ball. This method of throwing sacrifices distance and accuracy laterally.

(2) No method better than that taught for throwing the MK II grenade could be devised.

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(3) Results of throwing.

Grenade		M9A1 Hits	M9A1 Grenades Thrown	MK II Hits	MK II Grenades Thrown
Main Court (Standing)	15 yards	10	50	10	50
	20 yards	4	50	14	50
	25 yards	10	50	10	50
	30 yards	4	50	6	50
Crater (Kneeling)	25 yards	14	50	15	50

(4) (a) No appreciable difference could be noted in the accuracy of the throwing of the M9A1 and MK II grenades. The M9A1 grenade with T9 fuze does not roll appreciably after it hits the ground, therefore, in many cases the MK II grenade thrown short will reach the target where the M9A1 grenade with T9 fuze will remain where it fell.

(b) The M9A1 grenade seldom rolled more than 1/2 yard after striking the ground regardless of the distance thrown. The MK II grenade rolled approximately 10% of the range thrown.

(5) The maximum range the subject grenade was thrown was 47 yards while the average distance thrown for a group of five men was 41 yards. The maximum range obtained throwing the MK II grenade was 50 yards and the average range obtained for a group of five men was 43 yards.

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Test No. 7

a. Purpose: To determine the demolition capabilities of the M9A1 grenade with T9 fuze.

b. Method:

(1) One of the subject grenades was placed against a section of 2" armor plate and fired.

(2) One grenade was placed against a section of two 3/4" armor plates spaced 8" apart.

(3) Five of the subject grenades were placed side by side in a plane perpendicular to the axis of a 14" oak tree and fired sympathetically by firing the center grenade.

c. Results:

(1) The subject grenades penetrated both the 2" plate and the two 3/4" plates spaced 8" apart.

(2) The center grenade cut through the 14" oak tree in a number of places but did not do sufficient damage to cause it to fall. The other 4 grenades were detonated sympathetically, however, the shaped charge was apparently disturbed and little additional damage was done.

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5. Summary of Facts Determined by Tests.

The foregoing tests have disclosed the following facts:

a. Forty-eight of the fifty-two T9 fuzes tested functioned, 25 of the 25 T2 fuzes tested functioned and 25 of the 25 M10A3 fuzes tested functioned. (Test No. 2)

b. The T9 and T2 fuzes make no noise when actuated other than the metallic sound of the safety lever being thrown free. The M10A3 fuze makes a distinct explosive report when the primer is actuated. (Test No. 2)

c. The T9 fuze has an average burning time of 4.3 seconds and the T2 and M10A3 fuzes have an average burning time of 4.4 seconds. (Test No. 2)

d. The T9 and T2 fuzes do not emit smoke. The M10A3 fuze smokes visibly. (Test No. 2)

e. The T9, T2 and M10A3 fuzes do not sparkle. The M10A3 fuze makes a visible flash when the fuze primer is actuated. The primers of the T9 and T2 fuzes do not flash when actuated. (Test No. 2)

f. The maximum range of the M9A1 grenade fuzed with T9 fuze is greater than that of the MK II grenade when projected from the M1 Rifle with the M1 projection adapter utilizing the M3 cartridge. The maximum range obtained with the M9A1 grenade with T9 fuze was 179 yards and that of the MK II grenade 153 yards. Due to its unstable flight, the M7 auxiliary cartridge did not increase the range of the M9A1 grenade but the MK II grenade was projected to a range of 214 yards. (Test No. 3)

g. The maximum range of the M9A1 and MK II grenades when projected from the carbine utilizing the M1 projection adapter and the M6 cartridge is approximately 95 yards. When using the M6 and M7 cartridges, the range of the MK II grenade is approximately 200 yards while that of the M9A1 grenade is 153 yards. (Test No. 3)

h. Twenty-five per cent of the M9A1 grenades projected with M3 Cartridge from the M1 Rifle are unstable in flight while 100% of those projected with the M3 and M7 cartridges are unstable in flight. (Test No. 3)

i. Both the M9A1 with T9 fuze and MK II grenades with T2 fuze are effective against personnel when the grenade bursts on the ground. (Test No. 4)

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j. When laying on its side in the normal position after being thrown the M9A1 grenade with T9 fuze does not give as good all around distribution of fragments as the MK II grenade. (Test No. 4)

k. The MK II grenade with T2 fuze is more effective against personnel in open and in fox holes than the M9A1 grenade with T9 fuze when burst in the air. (Test No. 5)

l. The present method of throwing the MK II grenade appears to be as good as any for throwing the M9A1 grenade with T9 fuze. (Test No. 6)

m. No appreciable difference in accuracy could be noted in the throwing of the M9A1 grenade with T9 fuze and the MK II grenade. (Test No. 6)

n. The average range subject grenade can be thrown is less than the MK II. (Test No. 6)

o. The M9A1 grenade with T9 fuze apparently retains its ability to penetrate. The use of several grenades as a demolition charge is not effective as the shaped charge effect of the grenades is apparently disturbed by sympathetic detonation. (Test No. 7)

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I concur in the above report:

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